

The optimal control of a multi-mass vibration propulsion system in a viscous incompressible fluid

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Abstract

The present work is devoted to the study of the optimal control of the two-mass vibration propulsion system in a viscous incompressible fluid. The study of the motion is carried out in two stages. At the first stage the simplified model of a viscous fluid is considered. On the basis of this model, the problem of the optimal control of the vibration system is solved in terms of minimizing energy consumption. The obtained optimal laws are studied at the second stage on the basis of the direct numerical simulation.

Keywords

Navier-Stokes equations, Numerical modeling, Optimal control, Vibration propulsion system, Viscous fluid